

**THIS OPINION WAS NOT WRITTEN FOR PUBLICATION**

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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***Ex parte*** KAZUHIRO TAKENAKA

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Appeal No. 95-4929  
Application 08/093,790<sup>1</sup>

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ON BRIEF

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Before MARTIN, FLEMING and TORCZON, ***Administrative Patent Judges.***  
FLEMING, ***Administrative Patent Judge.***

**DECISION ON APPEAL**

This is a decision on appeal from the final rejection of  
claims 4 through 10. Claims 1 through 3 have been canceled.

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<sup>1</sup>Application for patent filed July 19, 1993. According to appellant,  
this application is a continuation of application 07/853,691, filed July 16,  
1992.

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The invention relates to a memory structure using a ferroelectric material. More particularly, the invention relates to a nonvolatile memory capable of electric re-writing.

The independent claim 4 is reproduced as follows:

4. A semiconductor device comprising:

a transistor having a gate electrode over a substrate, and source and drain electrodes in said substrate;

a ferroelectric capacitor located above said substrate and including a lower electrode, a dielectric including a ferroelectric material which is located over said lower electrode, and an upper electrode having first and second portions, said dielectric being located between said first portion and the substrate, said second portion extending to and being in direct contact with said source electrode.

The Examiner relies on the following references:

Sigg et al. (Sigg)	4,141,022	Feb. 20, 1979
Green et al. (Green)	4,851,895	Jul. 25, 1989
Takenaka (Takenaka 049)	5,043,049	Aug. 27, 1991
Miller et al. (Miller)	5,046,043	Sep. 03, 1991
Takenaka (Takenaka 305)	5,099,305	Mar. 24, 1992

Claims 4, 7 and 9 stand rejected under 35 U.S.C. § 103 as being unpatentable over Takenaka 049 in view of Takenaka 305.

Claims 4 through 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Takenaka 049 in view of Takenaka 305 and further in view of Miller, Green or Sigg.

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Rather than reiterate the arguments of Appellant and the Examiner, reference is made to the brief and answer for the respective details thereof.

#### **OPINION**

After a careful review of the evidence before us, we do not agree with the Examiner that claims 4 through 10 are properly rejected under 35 U.S.C. § 103.

The Examiner has failed to set forth a **prima facie** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions. **In re Sernaker**, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." **Para-Ordnance Mfg. v. SGS Importers Int'l, Inc.**, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995), **cert. denied**, 117 S.Ct. 80 (1996) **citing W. L. Gore & Assocs., Inc. v. Garlock, Inc.**, 721 F.2d

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1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), **cert. denied**, 469 U.S. 851 (1984).

In regard to the rejection of claims 4, 7 and 9 as being unpatentable over Takenaka 049 in view of Takenaka 305, Appellant argues on pages 11 and 12 of the brief that neither Takenaka 049 nor Takenaka 305 teaches a portion of the upper electrode that extends to and is directly in contact with the source electrode as recited in Appellant's claim 4. We note that Appellant's independent claim 4 recites "an upper electrode having first and second portions ... said second portion extending to and being in direct contact with said source electrode."

The Examiner points out on page 2 of the answer that Takenaka 049 does not teaches an upper electrode having a second portion extending to and being in direct contract with the source electrode, but does teach in Figure 1C a lower electrode being in direct contract with the source electrode. The Examiner relies on Takenaka 305 for the teaching of a upper electrode being in direct contract with the source electrode. In particular, the Examiner states that Takenaka 305 teaches a "top" electrode 111 contacting the source/drain region in Figure 11.

Upon our review of Takenaka 305, we fail to find that Takenaka 305 teaches "an upper electrode having first and second portions ... said second portion extending to and being in direct contact with said source electrode" as recited in Appellants' claim 4. Takenaka 305 teaches in column 1, lines 55-64, that the dielectric 1108 is sandwiched between two electrodes 1107 and 1109 to create a ferroelectric capacitor. Takenaka 305 further teaches in column 1, lines 55-64, that the source is shown as element 1103. Figure 11 shows that the electrode 1109 is the top electrode. Figure 11 further shows that this electrode is not in direct contact with the source 1103. Takenaka 305 teaches in column 1, lines 55-64, that the source is contact with an aluminum connection electrode 1111 and the cell is completed by a second inter-layer insulating film 1110 and this aluminum connection electrode 1111.

Furthermore, we fail to find in reason to modify Takenaka 049 to obtain Appellant's invention. The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification

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obvious unless the prior art suggested the desirability of the modification." ***In re Fritch***, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), ***citing In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be an illogical and inappropriate process by which to determine patentability. ***In re Rouffet***, 47 USPQ2d 1453, 1457 (Fed. Cir. 1998).

In regard to the rejection of claims 4 through 10 under 35 U.S.C. § 103 as being unpatentable over Takenaka 049 in view of Takenaka 305 and further in view of Miller, Green or Sigg, we note that the Examiner relies on Takenaka 049 for the teaching of a upper electrode being in direct contract with the source electrode. Therefore, we will not sustain this rejection for the same reasons set forth above.

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We have not sustained the rejection of claims 4 through 10 under 35 U.S.C. § 103. Accordingly, the Examiner's decision is reversed.

***Reversed***

JOHN C. MARTIN	)	
Administrative Patent Judge	)	
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	)	
	)	BOARD OF PATENT
MICHAEL R. FLEMING	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
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	)	
RICHARD TORCZON	)	
Administrative Patent Judge	)	

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